ECS Configuration Change Request

1. Originator	2. Log Date:	3. CCR #:	4. Rev:	5. Tel:	6. Off:	7. Org.
Barry W. Fortlage	9-22-98	98-1039	—	925-0972	2069	SED

8. Title of Change: Cabletron MircoMMAC-22E and -24E Intelligent Stackable Hub Firmware Upgrade

9. Originator Signature	10. Date:	11. Class	12. Type:	13. Need Date:
Barry W Fortlage	9/17/98	II	CCR	9/30/98

14. Office Manager Signature	15. Date:	14. Date CCB Decision Needed:	17. Category of Change:	18. Priority:
Randy Bellinger	9/22/98	9/30/98	Other	Routine

19. Documentation/Drawings Impacted:	20. Schedule Impact:	21. CI(s) Affected:
910-TDA-003 Rev:07 ECS COTS Software Version Baseline - OPS; 910-TDA-010 Rev:01 ECS COTS Software Version Baseline - Development and Operations	none	

22. Release Affected:	23. Date due to Customer:	24. Impl. Date:	25. Effectivity of Change:	26. Est. Cost
REL2	n/a	9/30/98	n/a	None

27. Source Reference: ☐NCR (attach) ☒Action Item ☐GSFC CCR ☐Tech Ref. ☒Other:
AC-98-0380; CCR 98-0964 RevA

28. Description of Change: (use additional Sheets if necessary)
Cabletron MicroMMAC-22E and -24E Intelligent Stackable Hub units deployed in the field have a variety of firmware versions depending on their purchase and/or repair date. Cabletron recommends we upgrade all hubs to the newest firmware version 1.33.02. This firmware was successfully tested in the VATC SMC in early September (ref: CCR 98-0964 RevA). This CCR requests approval to deploy the firmware onto all 22 hubs in the four DAACs, the VATC, and the MiniDAAC. Installation is accomplished by a tftp transfer of the firmware image from a Unix host to the hub

29. Proposed Solution: (use additional sheets if necessary)
Install firmware version 1.33.02. Network Engineering to provide the firmware image, installation utility, installation instructions, and documentation to M&O and assist in the firmware installation as necessary. M&O to perform the install at the DAACs; COTS Support to perform the install in the VATC and MiniDAAC. The update takes approximately 15 minutes to complete (per hub). The firmware is Y2K compliant.

30. Alternate Solution: (use additional sheets if necessary)
none

31. Consequences if Change(s) are not approved: (use additional sheets if necessary)
Cabletron hubs will have non-uniform firmware versions across the DAACs. This condition reduces maintainability.

32. Does Change Affect Any of the following (Please Explain on additional sheet):
☐Maintenance Training ☐Performance ☐Operation Training ☐Safety ☐Service ☐Support ☐Test
☒Baseline (XRP) ☒Y2K Compliance

33. Organization(s) Affected: ☐CM ☐Clearcase SG ☐Contracts ☐Chief Eng ☐FOS ☒M&O ☐QO ☐Rel Dev ☐Procurement ☐RTSC ☐Sci. Data Eng ☐Security ☐Sys. Dev. ☒Sys. Eng. ☒Sys Verf Acpt ☐Other

34. Site(s) Affected: ☐EDF ☒Mini-DAAC ☒VATC ☒EDC ☒GSFC ☒LaRC ☒NSIDC ☐SMC ☐AK ☐JPL ☐EOC ☐Other

35. Board Comments:	36. Work Assigned To:

37. Release Authorized (For CM Use Only): ☐Yes ☐No	38. CM Verified/Signature and Date

39. EDF/REL2 CCB Chair (Sign/Date):	40. Disposition: ☒App ☐Ap/C ☐DisApproved ☐Withdraw ☐Fwd/ECS ☐Fwd/ESDIS	41. ESDIS ERB Concurrence:
Al Smith 9/25/98		

42. ECS CCB Chair (Sign/Date):	43. Disposition: App ☐ A/C ☐ DisApproved ☐ Withdraw ☐	44. CCR Closed Date:

ORIGINAL

TRW /cm

25 September 1998

Subject: Firmware Change to the Cabletron MicroMMAC-22E and –24E Intelligent Stackable Hubs

The following directive is issued to all DAACs and labs

Issue: All Cabletron hubs deployed in the ECS DAACs' and labs' local area networks are to receive common firmware version 1.33.02. This version is Y2K compliant. This technical directive provides the information necessary to install the firmware.

Fix:
1.0 General
This technical directive describes the procedure for installing firmware image (Cabletron's name is Flash Image) version 1.33.02 into the Cabletron MicroMMAC-22E and -24E Intelligent Stackable Hub via the network.
During the installation, the hub is not operational. Installation takes approximately fifteen minutes.

The firmware is uploaded to the hub from either a Unix platform or a PC. The hub uses a tftp process for the upload. Setup and control of the hub's upload process can be done via a telnet session to the hub's management utility or via a PC-based utility. [Note: This directive uses the terms "upload" and "download" interchangeably]

The firmware image is in two files. Only one file need be uploaded. The hub behaves differently depending upon which file is uploaded. The two files are labeled 13302.fls and 13302.hex. The former is the Runtime Download image (see Cabletron Customer Release Notes). The latter is the Standard Download. The Runtime Download image can be loaded from either Ethernet or FDDI and allows the hub to continue to operate, but a reset of the hub is necessary to activate the new firmware. The Standard Download image can be uploaded only from the Ethernet interface, and the FDDI interface is disabled during the uploading. Also, the Standard Download upload is preceded by the hub erasing the current firmware image in its flash memory followed by a reset of the hub at the upload conclusion. The risk in using the Standard Download file is that in the event of a problem or failure during the upload, the hub no longer has any firmware image to use; therefore, the hub will revert to a Unix "BOOTP" request state to request a firmware image. The Runtime Download does not cause the hub to clear its firmware and hence is safer.

The following files are made available to the ECS DAACs and labs:

1. 13302.hex - the Standard Download version of the firmware version 1.33.02 (binary)
2. 13302.fls - the Runtime Download version of the firmware version 1.33.02 (binary)
3. boottft2.zip – the Cabletron service utility for a Windows 95-based PC (PC setup)
4. winzip95.exe – the PC Windows-based compress/uncompress utility (PC executable)
5. 13302rel.doc – the Cabletron Customer Release Notes for firmware version 1.33.02 (MS Word)

There are four possible ways to install the new firmware. Each is documented in detail below. The choice of which option to use is dependent upon platform availability and network connectivity. THE RECOMMENDED OPTION TO USE IS OPTION 1 WITH RUNTIME DOWNLOAD (13302.fls) BECAUSE IT OFFERS THE LEAST DISRUPTION OF HUB SERVICE AND IS THE SAFEST. The options are as follows:

1. Unix platform with tftp server daemon and /tftpboot directory – This option requires you to connect a Unix platform (recommend a Sun) with the tftp server daemon and /tftpboot directory containing the firmware image to: (1) the hub's Ethernet port or (2) to a point on the network that is connected to the hub's FDDI interface such that the hub has unimpeded access to the platform for the tftp upload.

Uploading the 13302.hex version is not recommended for this method. A telnet session from this platform to the hub is used to set up the hub and initiate the firmware upload to the hub.

2. PC platform (recommend laptop) with Cabletron bootp/tftp server utility – This option requires you to connect a PC running Windows 95 to one of the hub's Ethernet port. The firmware (either 13302.hex or 13302.fls) is loaded onto the PC. The Cabletron utility controls the hub setup and upload event.
3. Hybrid – This option requires you to connect a PC as in option 2 above but allows you to use a Unix platform on the FDDI as in option 1 above to hold the firmware image and use the platform's tftp server daemon to upload to the hub. The PC's Cabletron utility is used in place of a telnet session to set up the hub for uploading.
4. BootP – This option is only used in the event that a .hex upload was attempted and it failed, causing the hub to revert to a bootp state to obtain its firmware image. This option is PC based as in option 2 above and uses the Cabletron utility to provide the proper bootp server responses to the hub for the upload event. As an alternative, one can set up a Unix-based bootp server process with appropriate daemon and /tftpboot file structure; however, these instructions do not include this alternative.

2.0 Procedure Details
Each procedure is now described in detail.

2.1 Option 1 – Unix with tftp server daemon and /tftpboot directory
Requirements (both are needed):

1. A Unix host with the tftp server process running and a /tftpboot directory. This host must be connected to the network that is accessible from the hub's FDDI interface, i.e., it must have network connectivity without intervening security that prohibits tftp traffic from it to the target hub. Ideally, the host is on the same FDDI network as the hub so as to minimize data transfer time (and hence the hub's downtime).
2. A host platform with x-term capability that also has accessibility to the hub over the hub's FDDI network. It may, in fact, be the tftp server host.

Procedure:

1. Place the firmware file into the /tftpboot directory of the tftp server. Do not change its file name. Use the 13302.fls version – do not use the .hex version.
2. Change the file's access privileges to "777" using the **chmod 777 13302.fls** command. You may need root privileges depending on how the /tftpboot directory ownership and read/write privileges have been set up.
3. Make sure the tftp server daemon is configured properly (check the /etc/inetd.conf file for a Sun Solaris, for example, for the daemon using /tftpboot file and launched at startup).
4. Using an x-term window on a Unix platform that has unobstructed network access to the target hub, log onto the hub using the **telnet <IPaddress>** command. Note that the hub's first management window shows the current firmware (a.k.a. Flash Image) version number. Enter the hub's SUPER-USER password. This will bring up the hub's MAIN MENU screen.
5. Select SETUP MENU by arrowing down to highlight it and press the enter key.
6. Select SYSTEM LEVEL.
7. Arrow down to "Default Interface". Change its value to 2 by using the numeric 2 key and press the enter key.
8. Select SAVE and press the enter key to save the change.
9. Select RETURN to return to the SETUP MENU.
10. Select RETURN to return to the MAIN MENU.
11. Select the MIB NAVIGATOR in the MAIN MENU screen. The MIB NAVIGATOR prompt "MIBNav" will appear.
12. Type in **ctron** and press the enter key.
13. Type in **cd 4/1/5/8/1** and press the enter key.

14. Display the current MIB branch list by typing **ls** and pressing the enter key. The list is approximately 21 lines long.
15. Set the Server IP address variable (ctDLNetAddress) by typing **set 18 <IPaddress>** and press the enter key, where <IPaddress> is the TCP/IP address of the tftp server. Note that 18 is the number eighteen and not the lowercase letter L. For example, **set 18 198.118.202.101**. The 18 refers to the eighteenth line of the branch list.
16. Set the image path and name variable (ctDLFileName) by typing **set 19 "13302.fls"** and press the enter key. Make sure to include the quote symbols in the key-in.
17. Set the OnlineDownload type (ctDLOnLineDownLoad) to "force download with reboot" by typing **set 16 2** and press the enter key. This will begin the download operation.
18. To check the download progress, look at the ctDLOperStatus entry value using the **ls** command. A value of 3 means normal operation (i.e., the download was completed successfully); a value of 4 means that the download is in progress; and a value of 5 means there has been an error preventing the download from completing successfully, in which case a hint as to the cause is shown in ctDLErrorString variable. The download will take multiple minutes to complete. Repeated **ls** commands are useful.
19. When the download has completed successfully (i.e., ctDLOperStatus is 3), type **exit** to exit the MIB NAVIGATOR window, returning to the MAIN MENU.
20. Reboot the hub by doing a power off-on sequence or depressing the RESET switch on the hub's front panel.
21. Log into the hub again to verify that the new Flash Image Version number that is displayed is the correct one (i.e., 1.33.02).
22. Change the file privileges of the image file on the tftp server to disallow world access by typing **chmod 700 13302.fls.**

2.2 Option 2 – PC with Cabletron TFTP/BootP service utility

Requirements:

1. A PC running Windows 95 with a connection to the hub's Ethernet port (anyone will do).
2. The Cabletron TFTP/BootP service utility. Place a copy of the utility's setup image **boottft2.zip** onto the PC and if not already available on the PC the uncompress utility **winzip95.exe**. Uncompress the boottft2.zip file into its executable file (**\bin\Tftpboot**) and release notes (/help/Tftpboot) – both in the \tftpboot directory.
3. The firmware image – Place a copy of the firmware image (13302.hex and/or 13302.fls) onto the PC.

Procedure:

1. At the MS-DOS prompt, execute a ping to an existing unit connected to the hub. This puts at lease one entry into the PC's TCP/IP ARP table.
2. Launch the Cabletron TFTP/BootP service utility. Select the **Start Download** tab at the bottom of the window.
3. Enter the hub's IP address in the **IP Address** window. Place the hub's SNMP read/write password in the **Community** window.
4. Depress the **Contact** button to display the hub's "last" upload information.
5. Clear the **Gateway IP Address** window.
6. Enter into the **TFTP Server IP Address** window the IP address of the PC.
7. Enter into the **File Name** window the fully qualified file name of the image – for example \tftpboot\13302.fls.
8. Depress the **Online Download** box so that it has an X in it if the 13302.fls version is being downloaded, else clear the box if the 13302.hex version is being downloaded.
9. Depress the **Download** button to initiate the download.
10. When the transfer is complete, depress the **Acknowledge** button.
11. A progress window will show the download's progress.

12. The hub's LED window display can be used to indicate that the hub is ready for operation. Reset the hub with a power off-on sequence or depress the RESET button on the front panel.
13. Quit out of the utility and re-launch it to ensure the hub has the right firmware (see the top text in the **Start Download** window).

2.3 Option 3 – Hybrid

Requirements:

1. Set up a Unix platform as in Option 1 above with the firmware image 13302.fls in /tftpboot directory, set the proper file access privileges, and have a tftp server daemon running. The Unix platform is connected to the FDDI network.
2. Set up a PC platform as in Option 2 above with the Cabletron TFTP/BootP service utility and connected to one of the hub's Ethernet ports.

Procedure:

1. At the MS-DOS prompt, execute a ping to an existing unit connected to the hub. This puts at lease one entry into the PC's TCP/IP ARP table.
2. Launch the Cabletron utility. Select the **Start Download** tab at the bottom of the window
3. Enter the hub's IP address in the **IP Address** window. Place the hub's SNMP read/write password in the **Community** window.
4. Depress the **Contact** button to display the hub's "last" upload information.
5. Enter into the **Gateway IP Address** window the FDDI network's default gateway IP address if the Unix host is not directly on the FDDI network; otherwise, clear the window.
6. Enter into the **TFTP Server IP Address** window the IP address of the Unix host.
7. Enter into the **File Name** window the file name 13302.fls. Do not include the directory /tftpboot. Depress the **Online Download** box so that it has an X in it.
8. Depress the **Download** button to initiate the download.
9. The hub's LED window display must be used to indicate that the transfer is complete and the hub is ready for operation. Reset the hub with a power off-on sequence or depress the RESET button on the front panel.
10. Quit out of the utility and re-launch it to ensure the hub has the right firmware (see the top text in the **Start Download** window).

2.4 Option 4 – Bootp

Requirements:

1. A PC running Windows 95 with a connection to the hub's Ethernet port (anyone will do).
2. The Cabletron TFTP/BootP service utility. Place a copy of the utility's setup image **boottft2.zip** onto the PC and if not already available on the PC the uncompress utility **winzip95.exe**. Uncompress the boottft2.zip file into its executable file (**\bin\ TFTP/BootP**) and release notes (also **Release Notes**) – both in the \tftpboot directory.
1. The firmware image – Place a copy of the firmware image 13302.hex onto the PC.
2. In a PC DOS window, execute **ping <IPaddress>** to an active host. The Cabletron TFTP/BootP service utility has a quirk in it that requires at lease one entry in the PC's TCP/IP ARP table. To verify that at least one entry now exists, execute **arp –a** at the DOS prompt.

Procedure:

1. Obtain the hub's Ethernet Address by selecting **View Log** at the bottom of the utility's window and look at the log entries for the Ethernet address of the unit doing the bootp broadcast.
2. Select the **Bootp Server** at the bottom of the utility's window.
3. Enter into the **MAC Address** window the hub's Ethernet Address (for example, 00-01-02-03-04-05).
4. Enter into the **IP Address** window the hub's IP address.